

# INTERNATIONAL FOOD INFORMATION SERVICE

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FAB 38

COFFEE

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Commonwealth Agricultural Bureaux, Farnham Royal, Bucks; Gesellschaft fur Information und Dokumentation, Frankfurt am Main; Institute of Food Technologists, Chicago; Centrum voor Landbouwpublicaties en Landbouwdocumentatie (Pudoc), Wageningen.



## INTRODUCTION

Food Annotated Bibliographies (FABs) are collections of abstracts on specific topics in food science and technology. The topics are chosen by the staff of the International Food Information Service as being of particular interest or importance. The topics normally interest individual workers, who may not require the full information provided in Food Science and Technology Abstracts, from which the abstracts for FABs are taken. The size and the cost of the FABs are controlled as much as possible with the interests of individual workers in mind.

Titles of the FABs now available are given on the back cover of this booklet. For up-to-date lists of FABs or suggestions for new topics please write to the address on the back cover. New subjects are searched for at least the five most recent volumes of Food Science and Technology Abstracts. Thereafter each FAB is updated monthly. Copies of each month's abstracts on any topic may be obtained as indicated on the back cover of this publication. At the end of each volume of up-dating, the abstracts are merged and made available as a separate supplement to the original FAB.

Some of the larger FABs have been divided into sections to facilitate use. FAB 47 also has a subject and author index provided.

Copies of all original articles referred to in the abstracts may be bought (or occasionally borrowed) from the International Food Information Service. A form for ordering these is provided at the end of this FAB.

Coverage of the subject has been restricted to that of Food Science and Technology Abstracts, which covers over 1200 of the important food journals, patents from 20 countries and books published world-wide. Every effort is made to include all significant references, but editorial discretion is used on the many articles of borderline interest. If the reader particularly needs an exhaustive search of the subject, we will be pleased to provide any other references that we have available. We would, in any case, encourage readers to write or telephone us with any comments or queries that they may have.

H. BROOKES  
EDITOR



**1**

**[Process for producing frozen granulates.] Verfahren zur Herstellung von gefrorenen Granulaten.**

Heck, K. D.; Näher, G.; Pahl, E.; Kittelsen, S.; Beuerle, K. (Boehringer Mannheim GmbH)

**German Federal Republic Patent Application**

2 659 546 (1978) [De]

Frozen granulates of liquid food products, e.g. fruit juice, coffee, tea and soups, are obtained by contacting a stream of the liquid product with a stream of a rapidly evaporating coolant in a sufficiently cooled environment. Suitable coolants are e.g. dinitrogen monoxide, an alkylene oxide, ammonia, CO<sub>2</sub> and preferably N<sub>2</sub>. The resulting granulate consists of small spherical particles from which the gaseous coolant can be readily separated, and which can then be freeze-dried and further processed. The freeze-dried granulates are uniform and readily soluble. Apparatus is also claimed. W&Co

**2**

**[The friendly way to the coffee consumer.] Der freundliche Weg zum Kaffeeverbraucher.**

Anon.

**Neue Verpackung** 31 (2) 114-118 (1978) [De]

The parallelepiped 'Papercan' is a sealed inner bag/outer carton designed specifically for packaging coffee. It consists of a printed Chromokarton outer carton, a polyethylene (PE)/Al/polyester inner bag, a PE/PETP/PE tear strip opening, and a protective board sleeve. An illustrated description is given of the machinery for the fill/seal operation. HBr

**3**

**Nylon in packaging.**

Matinini, R.

**Packaging** 49 (582) 29-31, 35 (1978) [En]

The major physical properties of 2 new nylon films (Filmon CS and BX) are tabulated in detail. Their high barrier properties make them particularly suited for the packaging of frozen foods, boil-in-bag foods, cheese blocks, cooked and fresh meats, roasted peanuts, smoked fish and coffee. HBr

**4**

**[The Pari-Vac double bag.] Der Pari-Vac-Doppelbeutel.**

Anon.

**Neue Verpackung** 31 (6) 850, 853-854 (1978) [De]

The Pari-Vac double bag (made by Schroeder & Wagner) consists of a metallized polyester/polyethylene (PE) laminate inner bag and a coated kraft paper outer bag. It is said to be particularly suited to packaging coffee. HBr

**5**

**[Copper contents in roasted and ground coffee and in coffee drink.]**

Lara, W. H.; Toledo, M. de; Takahashi, M. Y.

**Revista do Instituto Adolfo Lutz** 35/36 17-22 (1975/1976) [7 ref. Pt, en] [Inst. A. Lutz, Sao Paolo, Brazil]

100 samples of roasted and ground (R & G) coffee from different parts of Brazil and the beverages prepared from the samples were analysed for Cu contents by AAS. Tabulated results showed Cu contents of 6-30 mg/kg (mean 17.26, s.d. 4.89) in the R & G, and 0.5-2.0 (mean 1.20, s.d. 0.26) in the beverage. Since the beverage was prepared at 1:5 dilution, the results suggested that 35.5% of the Cu was extracted during infusion. 64.4% of the Cu was extracted during infusion of 5 samples of R & G coffee containing <10 p.p.m. Cu (mean 7.0 mg/kg in R & G, and 0.9 in the beverage). There was no correlation between Cu contents of R & G and beverage coffee. RM

**6**

**The tale of coffee - history, composition, properties, usage.**

Martin, C. R. A.

**British Food Journal** 79 (880) 166-168 (1977) [3 ref. En]

Coffee, mainly from the spp. *Caffea arabica* and *C. canephora*, is indigenous to the New World, and the article of commerce is defined as decorticated berries which have been roasted and/or ground. Chemical composition is briefly reviewed - the active principle is the stimulant caffeine (trimethylxanthine), and the flavour and aroma are due to a complex mixture of volatiles as yet imperfectly analysed. Other food uses include coffee essences and dried instant coffee preparations. JRR

**7**

**Recovery of coffee volatiles.**

MacDonald, D. L.; Weikel, J. A. (Procter & Gamble Co.)

**United States Patent** 4 092 436 (1978) [En]

Cooled, roasted, and ground coffee is mixed with finely ground ice and formed into a bed through which water vapour is passed to melt the ice and uniformly wet the coffee, thereby uniformly stripping the essential volatiles which are collected in a cold trap. IFT

**8**

**Process for producing coffee extract.**

Katz, S. N.; Gottesman, M.; Haya, M. (General Foods Corp.)

**United States Patent** 4 088 794 (1978) [En]

A process is described for producing a high quality coffee extract wherein progressively less extracted roasted and ground coffee is countercurrently contacted with an aqueous extraction liquid in the extraction columns of a percolator set. The improvement comprises utilizing a superficial velocity of aqueous extraction past the roasted and ground coffee of at least 0.50 ft/min, including the fresh stage extraction column. IFT

**9**

**Decaffeination of green coffee.**

Jones, G. V.; Coogan, J. F., III (General Foods Corp.)

**United States Patent** 4 087 562 (1978) [En]

Moistened green coffee is contacted with diethyl succinate to remove caffeine. Residual diethyl succinate is removed, then the coffee is roasted. IFT

**10****A new type of flat sour spoilage.**

Nakayama, A.; Samo, S.; Ikegami, Y.

*Bulletin of the Japanese Society of Scientific Fisheries [Nihon Suisan Gakkai-shi]* 43 (7) 899 (1977)  
 [4 ref. En] [Tokyo Inst. of Food Tech., Minami Hanayashiki, Kawanishi City, Hyogo, Japan]

A form of flat sour spoilage is described, which causes spoilage of canned coffee held at approx. 60° C in a vending machine. The responsible organisms were found to be spore-forming obligate anaerobes growing sparingly at 45° C and better at 65° C than at 55° C. The growth characteristics satisfy some but not all of the criteria for identification as Desulfotomaculum nigrificans. 2 strains incubated in normal canned coffee produced flat sour spoilage after 10-20 days, and spores of 1 strain ( $4.9 \times 10^2$ /ml) had a thermal death time of 25 min at 120° C. JRR

**11****[Rapid coffee-filter.] Schnellkaffeefilter.**

Comouth, J.; Schwarze, M.

**German Federal Republic Patent Application**

2 657 498 (1978) [De]

A filter-bag as a unit with a positioning device for a coffee-cup is designed so that the positioning device consists of 2 clips from which the bag is suspended and which open up when the bag is opened, so that the 2 clips can be placed in the cup. Recesses in the lower parts of the clips prevent the filter bag from closing up. Preparation of a single cup of coffee is made easier. W&Co

**12****Standard for urns, beverage.**

**Canada, Canadian Government Specifications Board  
 Canadian Government Specifications Board  
 Standard CGSB 52-GP-8M,** 9pp. (1977) [En, Fr]

This standard applies to square formed, low profile beverage urns for boiling water and brewing coffee by means of steam or electricity. AL

**13****Specification for coffee.**

Jamaica, Jamaican Bureau of Standards

**Jamaican Standard JS 61:1977,** 8pp. (1977) [En]

Requirements are given for green, roasted-and-ground, and instant (regular and decaffeinated) coffee, together with analytical procedures for screening analysis, loss on drying, detn. of residual O<sub>2</sub>, detn. of caffeine, and sediment test. AL

**14****Moisture sorption isotherms of coffee products**

Hayakawa, K.-I.; Matas, J.; Hwang, M. P.

*Journal of Food Science* 43 (3) 1026-1027 (1978) [13 ref. En] [Dep. of Food Sci., Cook Coll., Rutgers State Univ., PO Box 231, New Jersey, New Brunswick 08903, USA]

The moisture sorption isotherms of 6 different coffee products were determined at 20° and 30° C by a standard procedure which used saturated salt solutions. According to the analysis of variance applied to

collected adsorption data, it was observed that different drying methods (M), temp. of adsorption (T), and environmental RH significantly influenced moisture adsorption by the product. It was also observed that interactions between M and decaffeination as well as between M and RH were also statistically significant. Monolayer values and sorption heat values were estimated from the isotherms by using the Brunauer-Emmett-Teller and Clausius-Clapeyron's equations. IFT

**15****[Combination of freeze-concentration and freeze-drying to produce 'Lio-coffee'.]**

Beke, G.; Degen, G.

*Hütöipar* 24 (2) 58-60 (1977) [3 ref. Hu, en, ru] [Magyar Hütöipar Fejleszto Lab., Marton u. 3/b, Budapest IX, Hungary]

A new process for manufacture of instant coffee is described, with the aid of a flow-diagram. Aspects covered include: raw material requirements (Robusta and Victoria coffee var. giving good results); extract preparation; freeze-concentration; freezing of the conc. extract; freeze-drying; and packaging. Economics of the process are discussed. This method increases productivity and reduces costs. An instant white coffee may be manufactured by addition of cream to the freeze-concentrated extract before freeze-drying. [From En summ.] AJDW

**16****Effect of some operating conditions on the solubilization process during coffee brewing.**

[Lecture]

Voilley, A.; Simatos, D.

*International Congress of Food Science & Technology - Abstracts* p.122 (1978) [En] [Ecole Nat. Supérieure de Biologie Appliquée à la Nutr. & à l'Alimentation, F-21100 Dijon, France]

A study of coffee solubilization was carried out in a specially designed apparatus. 7.5-14 g coffee grounds were suspended in 100 ml water at a definite temp. (70-90° C) for 0.5-20 min. The mixture was very quickly filtered and the extract analysed. Variations in soluble content as a function of time, temp., and coffee: water ratio were interpreted in relation to a model based on the general equation of diffusion (Crank) and assuming coffee grounds to be spherical particles suspended in a homogeneous system. [See FSTA (1979) 11 2A60.] AL

**17****Coffee roasting.**

Smith, H. L., Jr. (Smitherm Industries Inc.)

**United States Patent** 4 096 792 (1978) [En]

Apparatus is described for the continuous roasting of coffee beans or the like which comprises 1st and 2nd reactors, each of which includes a shell, means in said shell comprising a movable assembly for supporting the beans to be processed therein, means for rotating the movable assembly about a vertical axis to displace the beans in the reactor from a 1st location to a 2nd location, inlet means above the movable assembly

through which beans can be charged into the assembly, and deflector means for keeping beans from between the movable assembly and reactor shell. IFT

## 18

### Coffee volatiles concentrate.

Gregg, R. (Procter & Gamble Co.)

**United States Patent** 4 100 305 (1978) [En]

A method is described for preparing coffee volatiles in which roast ground coffee is uniformly wetted with water while in the turbulent state of fluidization and then contacted in the same state with cool steam under reduced pressure to devolatilize it. The volatiles-laden steam is then collected as a frost and melted by contact with an aqueous coffee extract. IFT

## 19

[Possibilities of determination of the extraction yield of coffee extract.] Möglichkeiten zur Ermittlung der Extraktionsausbeute bei löslichem Kaffee. [Lecture]

Maier, H. G.

**Lebensmittelchemie und Gerichtliche Chemie** 32 (4) 84 (1978) [De] [Inst. für Lebensmittelchem., Tech. Univ., 3300 Braunschweig, Federal Republic of Germany]

Studies were conducted on industrially- and laboratory-prepared coffee extracts to evaluate the potential for use of concn. of various ingredients for detn. of the extraction yield. The results show that contents of total high mol. wt. material, high mol. wt. melanoidins, hydroxymethylfurfural, monosaccharides and oligosaccharides generally increase, whereas the total ash, sulphate ash and K contents and the electrical conductivity decrease with increasing degree of extraction. Concn. of Na, Ca, Mg and P vary irregularly or remain approx. constant. It is concluded that the most suitable criterion for detn. of the degree of extraction is the K concn., followed by sulphate ash and total ash concn. [See FSTA (1979) 11 2A59.] AJDW

## 20

Influence of some processing conditions on the quality of coffee brew. [Lecture]

Voilley, A.; Sauvageot, F.; Simatos, D.

**International Congress of Food Science & Technology - Abstracts** p.123 (1978) [En] [ENS.BANA, F-21 100 Dijon, France]

The influence of some processing conditions on the organoleptic quality of coffee beverage (grinding, coffee:ratio, water temp. and pressure during brewing) was investigated by panel sensory analysis and certain physico-chemical measurements (soluble contents, pH, acidity, viscosity, optical density, electrical conductivity, caffeine and some volatiles). The study was performed on a standard Arabica roasted coffee and with an experimental extraction machine (Expresso type) permitting control of the processing conditions. A linear multiple regression analysis demonstrated that brewing temp. was the main parameter influencing the soluble content of the extract. Temp. also influenced qualitatively the extract, as shown by sensory analysis and physico-chemical properties: when temp. increased, the ratio of optical density to solubles increased, the ratio of conductivity to solubles decreased, and the ratio

of acidity to solubles was constant. An attempt was made to optimize the brewing conditions in order to obtain a coffee beverage with definite organoleptic properties. [See FSTA (1979) 11 2A60.] AS

## 21

[Evaluation of the composition and labelling of roasted coffee.] Zur Beurteilung von Röstkaffee nach Zusammensetzung und Bezeichnung. [Lecture]

Wurziger, J.

**Lebensmittelchemie und Gerichtliche Chemie** 32 (4) 81 (1978) [De] [Chem.]

Lebensmitteluntersuchungsanstalt im Hygienischen Inst., 2000 Hamburg, Federal Republic of Germany]

Commercial classification and description of coffees is discussed, with reference to differences between the Arabica and Robusta types. The importance of differentiation between Robusta and Arabica coffees is considered, in relation to detection of adulteration of Arabica coffees with the Robusta type. A procedure for detection of raw coffee treatments is described, based on shaking a petroleum ether extract of the coffee with aqueous/alcoholic KOH, and detn. of fat and diterpenes in the upper layer, and the alkali coloration number and the concn. of chlorogenic acid-derived compounds in the lower layer; chlorogenic acid and carboxy-5-hydroxytryptamides may be determined in a methanolic extract of the residue from petroleum ether extraction. Examples of the use of this procedure are discussed, and effects of steaming on the characteristics of raw coffee are considered. [See FSTA (1979) 11 2A59.] AJDW

## 22

[Brewing tests with two-rowed spring barleys of the 1976 harvest.] Brauversuche mit zweizeiligen Sommergersten der Ernte 1976.

Schildbach, R.; Greif, P.

**Monatsschrift für Brauerei** 31 (5) 147-148, 150 (1978) [De, en, fr] [Rohstoffabteilung Versuchs- & Lehranstalt für Brauerei, Berlin]

Studies were conducted on 2-rowed spring barleys grown at 3 locations; tables of data are given for the composition and physicochemical properties of the malts, worts and beers prepared from the var. under test. Overall quality was relatively low; however, considerable differences between var. were observed. Several new var. gave good results. Combi gave good extract yield (79.5%) and brewhouse yield (72.7%), good solubilization, good filterability, a rather dark beer colour (11.5 EBC units), high tannin concn. (183 mg/l.) and good foaming characteristics; Zeisig gave good extract yield (79.1%), good cell wall solubilization, high final attenuation of wort (83%) and beer (82.6%), but relatively low foam values; and Aura had high extract yield (79.2%) and brewhouse yield (72.4%), moderate beer colour (9.1 EBC units), high diastatic power and high foam values. TUB-IGB

## 23

Dietary dairy drinks fortified with proteins, vitamins and minerals. [Lecture]

Caric, M.; Marić, S.; Gavarić, D.

**International Congress of Food Science & Technology - Abstracts** p.274 (1978) [En] [Fac. of

Tech., Dep. of Dairy Tech., Novi Sad Univ., 21000 Novi Sad, Yugoslavia]

Various formulations of coffee, cocoa or caramel milk drinks fortified with sodium caseinate, Fe and vitamins A, B and D were tested organoleptically; on the basis of these results, chemical composition, and nutritional needs of sick and old people, the best formulation of each type of drink was selected for further trials under industrial conditions. [See FSTA (1979) 11 2A60.] CDP

## 24

[Freeze-drying in Ecuador.]

Vargas Zunigo, A.

*Revue Generale du Froid* 69 (6) 417-419 (1978) [2 ref. . Fr][Ecole Polytech. Superieure 'del Litoral', Guayaquil, Ecuador]

The applications of freeze-drying for medical and veterinary use and for food preservation are discussed. The latter includes preparation of infant foods (dried milk) and coffee. RM

## 25

A revival of in-store coffee roasting.

Lee, S.

*Tea and Coffee Trade Journal* 150 (7) 6, 10 (1978) [En]

The availability of a new type of small, inexpensive roasters has revived the interest of in-store roasting of coffee beans, for sale as whole beans. The new roasters operate by fluidization, the hot air stream keeping the beans in constant motion. Patented by M. Sivetz [FSTA (1976) 8 12H2126] they are electrically heated and available in 3, 6, 12 and 24 lb sizes, and roast in 16-20 min at 415-450° F. RM

## 26

Roasting is their speciality.

Weeks, H. S.

*Tea and Coffee Trade Journal* 150 (9) 20-21, 41-43 (1978) [En][E. US Trade Dev. Office, Port Authority of New York & New Jersey, USA]

The coffee roasting procedures at the Maxwell House Coffee Hoboken plant are described, from the arrival of dried green coffee to the ready roast and ground, instant, freeze-dried and decaffeinated coffee. RM

## 27

Study shows lower acidity produced by refined coffee.

Lee, S.

*Tea and Coffee Trade Journal* 150 (8) 6, 10 (1978) [En]

The author reports on a double-crossover, double-blind clinical trial on 30 gastric patients given normally processed or refined (treated with supersaturated steam before roasting) coffee. Stomach acidity measurements showed that acid concn. was quadrupled after drinking normal coffee but not even doubled by refined coffee. RM

## 28

The story of Toraja coffee.

Hayama, T.

*Tea and Coffee Trade Journal* 150 (9) 26-27 (1978) [En][Toshoku America Inc., Japan]

The production of coffee in Toraja province of Indonesia, and a new processing plant are briefly described. Distributed under the brand name "Toarco Toraja Coffee", it has mild acid, rich body and mellow taste and aroma. RM

## 29

[Process for extraction of vegetable matter.]

Clark, B. (Societe des Produits Nestle SA)

*Swiss Patent* 598 848 (1978) [Fr]

A method for extracting coffee is described, in which the coffee is in a battery of extractors through which hot water passes countercurrent. The extracted and almost exhausted batches of coffee are extracted with water at 150-185° C while the batches of fresh or slightly extracted coffee are percolated with water at approx. 100° C. The partial evaporation of liquid which occurs between these batches has to be made up by addition of water. W&Co

## 30

Taste discrimination vs hedonic response to sucrose in coffee beverage. An interlaboratory study.

Lundgren, B.; Jonsson, B.; Pangborn, R. M.; Sontag, A. M.; Barylko-Pikielna, N.; Pietrzak, E.; Santos Garruti, R. dos; Chaib Moraes, M. A.; Yoshida, M.

*Chemical Senses and Flavor* 3 (3) 249-265 (1978) [11 ref. En][Swedish Food Inst., S-400 23 Göteborg, Sweden]

Degree of liking, using a 17-point hedonic scale, and discrimination taste thresholds, using a paired-comparison technique, were determined in a coffee beverage containing 0, 2.5, 5.0, 7.5 and 10.0% sucrose at laboratories in Brazil, Japan, Poland, Sweden and USA. Hedonic responses from the 122 subjects were subdivided into 4 distinct sub-groups, according to different patterns as a function of sucrose concn. Different frequencies of these hedonic patterns resulted from the 5 laboratories. With few exceptions, repeated hedonic testing at the termination of the experiment matched those from the beginning, indicating stability of response during the lengthy study. No differences were observed in hedonic responses (nor in discrimination ability) between the male and female subjects at each laboratory. Discrimination thresholds at the 5 standard sucrose concn. and corresponding Weber ratios, were reported for the pooled data within each laboratory. In general, the Weber ratios were higher at the lower concn. indicating dependence of discrimination upon the standard concn. Notable differences in discrimination ability were evident among the 5 laboratories, but were unrelated to degree of liking for sweetness in the coffee. Subjects with low or with high degree of liking for all coffee samples, as well as those with increasing or decreasing hedonic responses as a function of sucrose concn., discriminated

equally well among the concn. levels. The data from all laboratories showed that ability to discriminate among sucrose levels and degree of liking for sucrose levels in coffee are independent behavioural responses. AS

### 31

**Feeding studies of irradiated foods with insects.** (In 'Food preservation by irradiation' [see FSTA (1979) 11 4G312]) [Lecture]

Loaharanu, S.

II, 113-131 (1978) [23 ref. En] [Dornbacherstrasse 115/7, A-1170 Vienna, Austria]

In preliminary investigations it was found that irradiated cocoa beans and white and red kidney beans (*Phaseolus* spp.) did not significantly change the % of egg-hatch in the insects tested. In more detailed investigations food samples susceptible to insect spoilage and representative of widely consumed human foods were fed to various insect spp. The development, sex distortion, reproductivity, cytogenetic aberrations as related to dominant lethality and meiosis stage of the insects were investigated. Black beans, *Phaseolus* spp., irradiated with  $\leq 200$  krad of  $\gamma$ -rays did not apparently change the % survival and the sex ratio of the bean weevil, *Zabrotes subfasciatus*. Dominant lethality in the German cockroach, *Blatella germanica*, fed on irradiated black beans did not apparently occur when considering the results of cytological investigation and the number of offspring obtained. Dried sardine samples irradiated with  $\leq 400$  krad of  $\gamma$ -rays did not apparently affect the survival or cause sex distortion in the cheese skipper, *Piophila casei*, and did not induce dominant lethality in the German cockroach. Coffee processed from coffee beans irradiated with  $\leq 1000$  krad of  $\gamma$ -rays did not apparently cause adverse effects on the experimental insects. AS

### 32

[The coffee pack ... continued.]

Anon.

*Emballages* 48 (356) 67-69 (1978) [Fr]

Illustrated descriptions are given of the Paper Can, the Soft Can and the Cekaline composite cartonboard/Al foil or /plastics cartons with airtight inner packs for packaging coffee. HBr

### 33

[One unit and many shapes for packaging instant coffee.]

Anon.

*Imballaggio* 29 (267) 246-249 (1978) [It]

A detailed illustrated description, with schematic flow-line, is given of the FVB 135 (Hesser) bottling line used by the German firm of Jacobs for packaging instant coffee (50, 100 and 200 g sizes) under a number of brands in different countries. HBr

### 34

[Pressure equalizing valve for container.]

Druckausgleichsventil für Verpackungsbehälter.  
Spalding, G.; Glas, W.; Domke, K. (Robert Bosch GmbH)

*German Federal Republic Patent Application*

2 707 222 (1978) [De]

Pressure equalizing valves, designed to prevent the expanding and possible bursting of e.g. bag-shaped containers for products which may release a gas, e.g. roasted coffee, may be produced efficiently and economically by the continuous combination of only a few layers of material, from which combination the individual valves may be separated. The valve consists of a housing, a valve seat plate and, arranged between these, a valve membrane which covers an aperture; the parts are combined by an adhesive layer applied to the housing only. The seat plate and/or membrane may have an additional O<sub>2</sub> barrier consisting of a thin PVDC coating or produced by vapour-deposition of metal. W&Co

### 35

[Process for production of coffee extract.]

Marsh, W. C.; Wimmers, J. E. (Societe des Produits Nestle SA)

*Swiss Patent* 598 769 (1978) [Fr]

A process for making coffee extract, by which the extracting liquid is passed countercurrent through a battery of percolators filled with coffee, is improved by giving any fresh coffee a preliminary extraction with liquid extract to strip it of coffee volatiles before putting it in series in the battery. W&Co

### 36

[Process for roasting raw coffee.] Verfahren zum Rösten von Rohkaffee.

Wöhrlé, geborene Frick, P.

*German Federal Republic Patent Application*

2 649 450 (1978) [De]

The raw coffee is placed in a roasting drum and roasted very rapidly at a high temp. The empty drum is first heated to 200-260°C, and the coffee is introduced into the heated drum. The above temp. is maintained until the partially roasted coffee starts to crackle audibly. Further supply of heat is then interrupted for 1-2 min. The roasting of the coffee is finished at 150-180°C, until it possesses a yellow-brownish colour. Roasting damage is thus reduced, by 2-3%. W&Co

### 37

Coffee bags: a new approach to an old concept.

Colton, R. L.

*Tea and Coffee Trade Journal* 150 (8) 16-19 (1978)

[En]

The problems of packaging and marketing coffee bags are discussed. 2 successful solutions are described, viz. the Lyons-Tetley blend of ground roast and instant coffee in special perforated polypropylene film bags and packed in 20 units in an N<sub>2</sub> atm in heat-sealed, free-standing plastics-Al foil laminate bags, and a new product (US patent filed) of ground roast coffee coated with dried coffee extract, produced by mixing conc. liquid coffee extract with ground roast coffee and then drying. A completely homogeneous free-flowing product is obtained which will not separate. The coating of dried extract (mainly proteins, organic acids and sugars) prevents oil staining of the cheaper cellulosic fibre bag material, retards deterioration (oxidation) of the ground roast coffee after opening the outer bag; and

the coated product is much less hygroscopic than instant coffee and resistant to caking. The new product has a fast infusion rate, making the 8-10 cup size bag practical for office or restaurant use. RM

## 38

### **Carbonated coffee drink.**

Cho, K.; Watanabe, T. (Art Coffee Co. Ltd.)

**United States Patent 4 105 802 (1978) [En]**

A process is described in which an aqueous coffee extract containing a propylene glycol fatty acid ester anti-foaming agent is carbonated by impregnating it with CO<sub>2</sub> under pressure. IFT

## 39

### **Decaffeination process.**

Societe des Produits Nestle SA

**British Patent 1 516 208 (1978) [En]**

A process is described for the decaffeination of aqueous coffee or tea extracts by extraction with a fatty liquid such as a natural glyceride oil. IFT

## 40

### **Instant milk-containing coffee.**

Ishigaki, T. (Ishigaki Shokuhin Inc.)

**United States Patent 4 081 560 (1978) [En]**

In an elongated sachet (portion pack) sugar separates instant coffee powder at one end and dried cream at the other. Tight packing prevents movement and mixing of the cream and coffee particles thus avoiding chemical interaction and deterioration. EJM

## 41

### **[Quantitative determination of coffee in blends with substitutes.]**

Resmini, P.; Volonterio, G.; Prati, F.

**Rivista della Societa Italiana di Scienza**

**dell'Alimentazione 7 (2) 123-126 (1978) [11 ref. It, en]**

[Istituto di Ind. Agrarie, Univ. di Milano, Milan, Italy]

A procedure was developed for detn. of the proportion of malt or roasted barley in coffee. The 'coffee' under test is ground to pass through a 30-40 mesh sieve and a 5 g sample is then extracted with 100 ml boiling water for 30 min. The extract is cooled to 55° C, hydrolysed using malt extract, and filtered; 100 ml filtrate are then hydrolysed with 7 ml conc. HCl, neutralized and filtered, and the reducing sugar content is determined by the Luff-Schoorl method. Studies were conducted by this method on samples of various coffees and coffee substitutes. The results show that genuine coffee has a reducing sugar content (after hydrolysis) of 6-7%, vs. approx. 60% for roasted barley products. In blends, the reducing sugar concn. was linearly related to % roasted barley. An experiment on known blends confirmed that the method permits accurate evaluation of the coffee substitute content. Studies on 5 retail products showed them to contain ≤ 100% roasted barley. The potential for detection of non-barley-based coffee substitutes is also discussed. AJDW

## 42

### **A comparative study of temperatures and relative humidities in the coffee storage units for parchment and clean coffees, i.e. unmodified-modified stores at Dandora and Kawaha house.**

Muriithi G. K.

**Kenya Coffee 43 (507/508) 193-200 (1978) [9 ref. En]**

The effects of the coffee store modifications described in the earlier article [see FSTA (1977) 9 9H1570] (i.e. fitting a lower ceiling and ventilation) on temp. and RH fluctuations are reported. Results, shown graphically, indicate that the fluctuations were reduced. By fitting an inner ceiling of reflective silver Kraft paper the lowest min. temp. during the cool season were 12°-14° C, though rises of 1-4° C were observed during the hot season (max. 19°-23° C). Max. and min. RH were 80 and 50%, resp. Results confirm that a double skin roof of reflective material with a freely ventilated air space between the 2 effectively limited the heat gain. Controlling the air entering the main part of the store by fans and automatic switchgear operating only during cool/dry periods also improved the environment. RM

## 43

### **Changes in flavour and taste of irradiated coffee beans. (In 'Food preservation by irradiation' [see FSTA (1979) 11 4G311]) [Lecture]**

Dias, M.; Loaharanu, S.; Vokac, L.

**I, 539-543 (1978) [6 ref. En] [CNEN, Brazilian Atomic Energy Commission, Rio de Janeiro, Brazil]**

Coffee beans given disinfestation doses of 50 krad were previously shown to produce an insect mortality rate of 98.33 ± 2.89% in the adult stage of Araecerus fasciculatus. To determine whether radiation has any effect on coffee flavour and aroma, coffee beans were irradiated with 0, 10, 25, 50, 75 or 100 krad, roasted and ground, and then submitted to organoleptic testing and analysed by gas chromatography. No significant changes were observed. AL

## 44

### **International Coffee Agreement 1976. Issues of selectivity, regulation and reciprocity.**

Khan, K. R.

**Food Policy 3 (3) 180-190 (1978) [35 ref. En]**

## 45

### **Oxazoles and oxazolines in foods.**

Maga, J. A.

**Journal of Agricultural and Food Chemistry 26 (5) 1049-1050 (1978) [12 ref. En] [Dep. of Food Sci. & Nutr., Colorado State Univ., Fort Collins, Colorado 80523, USA]**

The occurrence of oxazoles and oxazolines in foods is reviewed. Only 3 food systems have been reported to contain these compounds; oxazoles have been identified in coffee and cocoa, and both oxazoles and oxazolines have been identified in heated meats. Compounds identified by various workers are tabulated, as are reported sensory properties of 2 oxazoles and 3 oxazolines (in general all possess nutty flavours) and flavour thresholds. DIH

**46**

[The interspecific hybridization between *Coffea arabica* L. and *Coffea canephora* Pierre. Development and comparison of triploid, Arabusta and hexaploid hybrids. II.] Berthaud, J.

*Cafe-Cacao-The* 22 (2) 87-112 (1978) [20 ref. Fr, en, de, es] [Sta. de l'Orstrom de Man, Ivory Coast]

This study of interspecific hybridization between *C. arabica* and *C. canephora* contains a chapter on technological characters, i.e. bean size, caffeine contents and cup quality. The bean size, determined from beans in-parchment, exceeded that of the parent *C. arabica*. The mean 100-grain wt. at 10% moisture was  $12.7 \pm 2.3$  g for hexaploids (11 combinations), and  $17.9 \pm 2.4$  g for Arabustas (12 combinations), though 50% of Arabustas had 100-grain wt.  $> 18$  g and 20%  $> 20$  g, and 1 of the hexaploids had a 100-grain wt.  $> 18$  g. Mean caffeine contents were  $1.38 \pm 0.18\%$  on a DM basis (range 1.00-1.92) for hexaploids, and  $1.95 \pm 0.20\%$  (range 1.51-2.54) for Arabustas. Cup tests showed less body, strength and astringency in coffee brewed from hexaploids than in that from *C. canephora*. One of the hexaploids produced acceptable cup quality. Technological characteristics of the hexaploids resemble *C. arabica* more closely than did Arabustas. [See *Cafe-Cacao-The* (1978) 22 (1) 3-12 for part I.] RM

**47**

Association of some characters with cup quality in *Coffea canephora*  $\times$  *Coffea arabica* hybrids.

Suryakantha Raju, K.; Vishveshwara, S.; Srinivasan, C. S.

*Indian Coffee* 42 (7) 195-197 (1978) [16 ref. En] [Cent. Coffee Res. Inst., Coffee Res. Sta., PO 577 117, Chikmagalur District, Karnataka, India]

The relationship between cup quality of coffee made from beans of robusta  $\times$  arabica hybrids and wt. of fruit skin, fermentation time, mucilage content of beans, bean length and breadth, bean thickness, body of the liquor and acidity were studied. Body of the liquor showed max. influence on cup quality followed by bean thickness and acidity and these 3 together accounted for nearly 52% of the variation in cup quality of these hybrids. Fermentation for  $\leq 48$  h did not affect the cup quality adversely. CFTRI

**48**

[Roasting of coffee in a gaseous fluidized bed.]

Arjona, J. L.; Rios, G. M.; Gibert, H.; Vincent, J. C.

*Revue de la Conserve Alimentation Moderne* No. 67, 75-81 (1978) [8 ref. Fr] [Lab. de Genie Alimentaire, Univ. des Sci. & Tech. du Languedoc, 34060 Montpellier Cedex, France]

In continuation of earlier-described work [Arjona et al., *Alimentation* (1976) 54, 45-51] on the roasting of coffee in a gaseous fluidized layer an apparatus was evolved, and is described, in which the grains are not suspended directly in a hot air-current but plunged in a fluidized bed, which consists of fine inert particles, and brought to the proper temp. for roasting. Accounts are given of studies on the mechanical behaviour of the fluidized flotation systems, on thermal characteristics and the effects of various other physical factors. Results

are also given of investigations on the physico-chemical and sensory properties of the products obtained. It is concluded that roasting times of 3-5 min and gas-entry temp. between 220° and 240° C provided by the new method result in a quality of product at least as good as that obtained using traditional methods. Advantages and disadvantages of the new method are discussed. MJD

**49**

[Water-caffeine trichloroethylene system. Study of caffeine extraction in packed columns.]

Escardino, A.; Aucejo, A.; Costa, J. M.

*Revista de Agroquímica y Tecnología de Alimentos* 18 (2) 224-231 (1978) [13 ref. Es, en] [Univ. de Valencia, Valencia, Spain]

As part of the information required for the design of equipment for extracting caffeine contained in the mother liquor from coffee decaffeination, the authors studied the extraction of caffeine from aqueous solution with trichloroethylene in a column packed with Raschig rings. The height of a transfer unit (HUT) was correlated with the main variables, i.e. initial caffeine concn., flow rates of both phases and salinity of the aqueous phase. The values of HUT were calculated from a model that takes account of the axial dispersion of each phase. [See also FSTA (1978) 10 6H761.] AS

**50**

Aldicarb; tolerances for residues.

United States of America, Environmental Protection Agency

*Federal Register* 43 (250, Dec. 28) 60465-60466 (1978) [En] [Washington DC, USA]

A tolerance of 0.1 p.p.m. is established under the Federal Food, Drug, and Cosmetic Act for the combined residues of the insecticide and nematocide aldicarb (2-methyl-2-(methylthio)propionaldehyde O-(methylcarbamoyl)oxime) and its cholinesterase-inhibiting metabolites in or on coffee beans. CAS

**51**

Increased bitter taste detection thresholds in Yucatan inhabitants related to coffee as a dietary source of niacin.

Davis, R. G.

*Chemical Senses and Flavor* 3 (4) 423-429 (1978) [20 ref. En] [Vet. Administration Med. Cent., Lexington, Kentucky 40507, USA]

Persons subsisting on corn diets are at risk for pellagra, a complex disease of malnutrition, which responds partially to niacin therapy. Coffee, once roasted and brewed, contains therapeutic levels of niacin, but is bitter tasting. Reduced taste sensitivity to some bitter evoking substances is transmitted by a simple Mendelian process as a recessive trait. This report describes the study of a sample of Yucatan inhabitants who used coffee extensively and who were generally less sensitive to the bitter taste of phenylthiocarbamide (PTC), which is possibly the result of the survival advantage conferred by being relatively less sensitive to the bitter taste of coffee. It is speculated that a person who is less sensitive to bitter tastes would consume more coffee and, thus, offset the deleterious effects of a niacin deficient corn diet. AS

**52**

**Sialic acid in plant tissues: a history of incorrect identification due to the use of non-specific colorimetric reactions.**

Jennings, A. C.

*Journal of the Science of Food and Agriculture* 29 (11) 930-934 (1978) [31 ref. En] [Dep. of Agric. Biochem., Waite Agric. Res. Inst., Univ. of Adelaide, Glen Osmond, South Australia SO64, Australia]

Finely ground seeds of wheat, sunflower, coffee and french bean were either hydrolysed in acid directly, or after extraction with ethanol and/or after treatment in alkali to hydrolyse any O-acetyl sialic acids present. The acid hydrolysates were fractionated by ion-exchange chromatography. Sialic acid was not detected in any of the materials examined but quinic acid was found in all of them. It is concluded that some previous reports of sialic acid in plant seeds and tissues may have been due to the presence of quinic acid and of other compounds which show rather similar properties to sialic acid in chromatographic and colorimetric methods of analysis. AS

**53**

[**Process for removing caffeine from an aqueous extract of a vegetable substance and product so obtained.**]

Societe des Produits Nestle SA

*Swiss Patent* 597 768 (1978) [Fr]

An aqueous coffee or tea extract which has been conc. to a high solids content is passed through a column of hydrophobic dipole polymer resin (e.g. a styrene/divinylbenzene resin such as Amberlite XAD-2) in order to extract the caffeine and various soluble substances. The resin when saturated is then lixiviated with water at 65-85° C, which washes out the caffeine. The remainder of the flavouring and other substances left in the resin is then extracted with an aqueous organic solvent, such as 50% propanol, and returned to the original extract. W&Co

**54**

[**Coffee processing: chemical, physical and technological aspects. I. Changes in some chemical and physical characteristics.**]

Lerici, C. R.; Lercker, G.; Pepe, M.; Matassa, P.; Rosa, M. dalla

*Industrie delle Bevande* 7 (5) 345-351 (1978) [20 ref. It] [*Istituto di Industrie Agrarie (Tecnologie Alimentari), Univ. di Bologna, Bologna, Italy*]

A sample of Arabica coffee from Brazil roasted industrially was extracted in the laboratory in a 'Gaggia' machine by the 'espresso' method, and the extract was either (i) freeze-dried in a model BVF 8/ARB B. Basi apparatus or (ii) spray-dried in a Minor model Niro Atomizer. Data on moisture, crude protein (N × 6.25) total lipids, ash and extractives (by difference) and substances soluble in 80% ethanol (SE) are tabulated for raw and roasted coffee, and (i) and (ii) extracts resp. A balance sheet is presented showing that about 30% of protein, 1% of lipids, 75% of ash, 20% of extractives and the whole of SE passed into the extract. SE of the above mentioned coffees and extracts, and volatile components of extracts of under-roasted, roasted optimally or over-roasted Robusta coffee from the

Ivory Coast and of an uncharacterized coffee mixture were examined by GLC. Chromatograms and data on peak areas are presented and discussed from the viewpoint of processing changes. SKK

**55**

**Influence of fruit stage on the use of (2-chloroethyl) phosphonic acid (CEPA) in Kenya.**

Opile, W. R.

*Kenya Coffee* 43 (511) 301-309 (1978) [9 ref. En] [Coffee Res. Foundation, PO Box 4, Ruiru, Kenya]

This paper is identical to the one described in the preceding abstr. SP

**56**

[**Study of commercial manufacture of instant caffeine-containing beverages.**]

Lomachinskii, V. A.; Nakhmedov, F. G.; Koval'chuk, Z. A.

*Konservnaya i Ovoshchesushil'naya Promyshlennost'*

No. 5, 18-21 (1978) [Ru] [Vses. Nauchno-proizvodstvennoe Ob"edinenie Konservnoi Promyshlennosti i Spetsial'noi Pishchevoi Tekh., USSR]

Formulas for caffeine-containing instant beverages are given and the respective production line is outlined. The raw materials are cereals, chicory and coffee beans. Separate roastings, preparation of the blends of constituents, water extraction, filtering and cooling of extract, spray drying, dosing and packaging, are described. For example the beverage 'Novost' consists of a blend of 40% barley, 25% chicory, 15% rye, 10% oats and 10% coffee. The final product has 2.8% moisture, 0.55% caffeine, 4.35% ash, 59.2% total sugars (of which 20.3% are reducing sugars), 5.4% proteins, 2.87% amino N and pH 4.9. In hot water it dissolves within 18-20 s and in cold water within 2.5-3 min. 3 other beverages, and 1 caffeine-free beverage are described in tables. A total of 1664 t of these beverages was produced in 1977 and the 1978 estimated production is 3000 t. STI

**57**

[**Method for material exchange between a solid-particle food substance and a countercurrent liquid or gaseous solvent, and device for effecting the method.**] Verfahren zum Stoffaustausch zwischen einem teilchenförmigen Esstoff und einem flüssigen oder gasförmigen Lösungsmittel in Gegenstrom und Vorrichtung zur Durchführung dieses Verfahrens.

Schrein, J. (HAG AG)

*German Federal Republic Patent Application* 2 725 721 (1978) [De]

A stream of solvent containing a dispersed solid and a solvent stream are separated by a wall which is permeable to the solvent but impermeable to the solid. The solvent is periodically passed to and fro through the wall. Roasted coffee, ground to a particle size such as is used for domestic infusion, was extracted by this method. W&Co

**58**

**Process for manufacture of mild coffee.**

DEJ International Research Co. BV

*British Patent* 1 527 667 (1978) [En]

Gastrointestinal irritating compounds are removed from green coffee beans prior to roasting by a high temp. wash with an ester or ketone salt. IFT

59

[Gel chromatography of the brown pigments of coffee of different degrees of roasting.]

Barbetti, P.; Chiappini, I.

*Industrie delle Bevande* 7 (6) 455-460 (1978) [9 ref. It]  
[Istituto di Chimica delle Sostanze Naturali, Univ. degli Studi di Perugia, Perugia, Italy]

A series of chromatograms are given of the brown pigments of various samples of Santos coffee of different degrees of roasting. Roasting had a distinct effect on the pigment composition. HBr

60

Dihydrochalcone type sweetening agents.

I. Structure-taste relationships.

Antus, S.; Farkas, L.; Gottsegen, A.; Nogradi, M.; Pfliegl, T.

*Acta Chimica Academiae Scientiarum Hungaricae* 98 (2) 225-230 (1978) [16 ref. En] [Hungarian Acad. of Sci., POB 91, H-1521 Budapest, Hungary]

A systematic investigation of the structure-taste relationships in a series of 43 dihydrochalcones was carried out; chemical structure and taste of the compounds are given. An intensively and purely sweet atoxic compound, 1-[2-hydroxy-4-(3-sulpho-1-propyloxy)-phenyl]-3-(3-hydroxy-4-methoxyphenyl)-propan-1-one sodium salt, named chinoin-401, was developed, which has appreciable commercial potential. Synthesis [see following abstr.] is unsophisticated and starts from relatively inexpensive starting materials, viz. resorcinol and isovanillin. Compared with 1% sucrose solution, chinoin-401 is  $1500 \pm 300 \times$  sweeter. Sweetness intensity, however, drops with increasing concn. and the factor is only 220 compared with 10% sucrose solution. Tests in representative food preparations and beverages are said to give favourable results in general, except in coffee. LD<sub>50</sub> was >5000 mg/kg in rats, and subacute feeding of 10-250 mg/kg to rats daily for 3 months produced no pathological or other changes. AL

61

[Analysis of coffee and coffee products.]

Determination of moisture in green coffee. Dioxane distillation, Karl Fischer titration.] Untersuchung von Kaffee und Kaffee-Erzeugnissen. Bestimmung des Wassergehalts von Rohkaffee. Dioxandestillation, Karl-Fischer-Titration.

Germany, Federal Republic of, Deutscher Normenausschuss  
*German Federal Republic Standard DIN 10 766*, 3pp. (1977) [De]

A procedure is specified for detn. of moisture in green coffee by a procedure based on extraction of moisture from a 3-5 g ground green coffee sample with 80 ml water-free dioxane, separation of a water/dioxane mixture from the coffee residue by distillation, and detn. of moisture in the distillate by Karl Fischer titration, the quantity of moisture in the original sample being calculated on the basis of the quantity of Karl Fischer reagent used. AJDW

62

Adsorption process.

Kramer, F.; Henig, Y. S.; Garin, T. A.; Vogel, G. J. (General Foods Corp.)

*United States Patent* 4 113 887 (1978) [En]

A countercurrent adsorption process is described for separating a preferentially adsorbed component from an aqueous multi-component solution which contains additional compounds which are also adsorbed e.g. for use in decaffeinating aqueous extracts of green or roasted coffee. IFT

63

Adsorption process.

Henig, Y. S.; Purohit, K. S. (General Foods Corp.)

*United States Patent* 4 113 888 (1978) [En]

See preceding abstr.

64

[Incinerators for industrial waste.]

Verbrennungsanlagen für Industrieabfälle.

Shin, K. C.

*Wasser, Luft und Betrieb* 22 (11) 594-597 (1978) [9 ref. De, en]

Incinerators for special types of industrial waste are described, including use at a coffee factory, a plant extract factory and an oil refinery. RM

65

[Effect of packaging technique on quality of instant coffee during storage.]

Simonova, V. N.; Solov'eva, T. Ya.

*Izvestiya Vysshikh Uchebnykh Zavedenii, Pishchevaya Tekhnologiya* No. 4, 76-79 (1978) [12 ref. Ru] [Leningradskii Inst. Sovetskoi Torgovli im. F. Engel'sa, Leningrad, USSR]

Two methods of packaging instant coffee are compared: (i) in CO<sub>2</sub> atmosphere, (ii) in air. The material was polyethylene/Al foil, combined with cellophane. In (ii), the volatile components of the aroma complex and the free fatty acids ratio changed; in (i) the original quality was retained over the whole guarantee period. STI

66

[Carton for preparing a beverage.]

Favre, E. M. J. (Societe des Produits Nestle SA)

*Swiss Patent* 605 293 (1978) [Fr]

A measure of coffee for use e.g., with an espresso coffee machine, is contained in a carton, preferably in thin Al sheet in the general shape of a truncated cone with the narrower base in the shape of an obtuse cone, preferably with a weakened portion, which is pierced by the machine. The wider base which is lowermost when the carton is installed, has a flange which locates a membrane closing the base, which includes a line of weakness defining an openable part. A filter is arranged above the membrane. Pressure from the liquid passing into the carton causes the line of weakness to fracture, thereby defining a path of predetermined size for regular passage of the beverage. W&Co

67

**Decaffeination process.**

Katz, S. N. (General Foods Corp.)

**United States Patent 4 113 886 (1978) [En]**

A method for the membrane decaffeination of aqueous coffee compositions employing a porous, solvent-filled membrane in which the solvent is a water-immiscible, caffeine-specific solvent. IFT

68

**Coffee aromatization.**

Societe des Produits Nestle SA

**British Patent 1 525 808 (1978) [En]**

Coffee is aromatized by collecting a non-condensable aroma gas, mixing it with a liquid to produce an aroma-emulsion foam, followed by contact of the foam with soluble coffee solids. IFT

69

**Coffee aromatic isolate.**

Cazenave, P. (Societe d'Assistance Technique pour Produits Nestle SA)

**United States Patent 4 118 521 (1978) [En]**

A process is described for isolating an aromatic coffee fraction in which an aqueous coffee extract is contacted with an azeotropic mixture of pentane with either methylene chloride or trichloro-trifluoroethane. IFT

70

**Method for fixing cryogenically condensed coffee aromatics in a glyceride carrier.**

Howland, R. F.; Jasovsky, G. A.; Galanti, J. A. (General Foods Corp.)

**United States Patent 4 119 736 (1978) [En]**

A method is described for fixing cryogenically condensed coffee aromatics in a liquid glyceride in which a CO<sub>2</sub> frost containing coffee aroma gas is melted in a pressure vessel and the composition, after removal of water, is combined in the vessel with a liquid glyceride. IFT

71

**[Effect of concentration and drying processes on aroma retention in liquid foods.]**

Mafart, P.

**Bios 8/9 (12/1) 27-34 (1977/1978) [12 ref. Fr] [Dep. Biol. Appliquee, Inst. Univ. de Tech., BP 319, 29191 Quimper, France]**

Basic factors involved in loss of aroma from beverages are discussed, mainly in relation to fruit juices and coffee extracts. These include the entrainment of water and of aroma compounds, the effects of partition coeff., vapour pressure, temp., and movements to the surface e.g. rapid by mass convection or slow by molecular diffusion. Aroma volatility is not greatly influenced by its b.p., but is highly dependent on other constituents of the solution and increases with concn. e.g. during evaporation. Evaporation is the most critical process; boiling involves a high convection rate and relatively high temp. Risk is reduced by min. process time (i.e. high rate of heat transfer).

A centrifugal evaporator gives good results but energy and capital costs are high; falling film, multiple effect evaporation is most economic for fruit juices. Cryoconcentration undoubtedly achieves the best aroma retention; the critical stage of phase separation by compression, centrifugation or washing column is discussed. Reverse osmosis is also good in some cases, but the membranes and high pressure requirements are costly. Both the 2 preceding methods are probably limited to max. concn. of 25° Brix. Spray drying is favourable to aroma retention. The critical period is short if high initial concn. is followed by rapid drying of large particles in parallel flow with hot air, at the highest temp., to avoid loss of solubility e.g. coffee. Future potential of lyophilisation and microwaves under vacuum is also discussed. ELC

72

**A process for the removal of coffee color from wastewater.**

Hang, Y. D.; Woodams, E. E.

**Journal of Food Science 44 (1) 246-247 (1979) [9 ref. En] [New York State Agric. Exp. Sta., Cornell Univ., Geneva, New York 14456, USA]**

A simple and efficient process has been developed and is described for the removal of coffee colour from wastewater from a coffee processing plant by carbon adsorption. The quantity of coffee colour adsorbed by the carbon was strongly pH-dependent, being greater between pH 2 and 4. Contact time required to reach max. adsorption was 60 min. Adsorption efficiency did not increase appreciably when the temp. was elevated. Under optimum operating conditions, this carbon adsorption process reduced the colour concn. by 98%. Studies have shown the adsorption of coffee colour on activated carbon to be of the empirical Freundlich type. IFT

73

**[Method for producing a coffee mixture.] Verfahren zur Herstellung einer Kaffeemischung.**

Ewert, W. (Edelfettwerke Werner Schlüter GmbH &amp; Co.)

**German Federal Republic Patent Application 2 723 294 (1978) [De]**

Coffee mixture suitable for making infusions in paper bags is prepared by grinding together fully soluble coffee extract and roasted coffee. The proportion of roasted coffee to coffee extract is 1:1-1:2, preferably 1.0:1.2-1.0:1.7. The taste is similar to that of ground coffee prepared by conventional means. W&Co

74

**[Method for producing a freeze-dried coffee extract which is gentle on the stomach.] Verfahren zur Herstellung eines magenschonenden, gefriergetrockneten Kaffeepulvers.**

Führer, C. (Alfred Marchionini - Stiftung Allgemeine Fördergesellschaft mbH)

**German Federal Republic Patent Application 2 721 117 (1978) [De]**

Freeze-dried coffee powder free from phenol derivatives and tannin is made by preparing a standard coffee extract and mixing it with solid phenol and

tannin binders, e.g. water-insoluble, cross-linked polyvinylpyrrolidone. The bound phenolic and gastric juice stimulant-producing components are then removed. After removal of the insoluble ballast material, the clear solution is freeze-dried. W&Co

## 75

[Loose liquid milk - perfectly packaged in bulk. The LIQUIwell packaging system for bulk consumption use.] Lose Trinkmilch - in Grossenheiten vorbildlich verpackt. Das LIQUIwell-Verpackungssystem für den Grossverbraucherbereich.

Anon.

*Molkerei-Zeitung Welt der Milch* 32 (39) 1262-1263 (1978) [De]

The LIQUIwell system, developed by SVD Verpackungen GmbH, Ahaus/Westfalen (Federal Republic of Germany) in collaboration with the Münster dairy is composed of (i) a dairy packaging unit and (ii) a dispenser unit for the vendor (both are photographically illustrated). (i) consists of a metering device linked to a filler distributing the milk into 20/25 l. bags provided with a tube outlet and contained in special baskets or corrugated fibre board boxes. The containers are easily palletized and/or transported. (ii) consists of a refrigerated dispenser for 3 containers intended for fitting on the vendor's vehicle, or use in canteens, hospitals and the like, or for school milk. For vending, the bag tubes are connected (after cutting off the seal) to a dispenser, the milk flowing by gravity after release of the tube clamp. The costs are (DM): (i) 4000, (ii) 1500, special basket 20, and bag 0.04/l. The system is also recommended for coffee cream and whipping cream. SKK

## 76

Breathing bag keeps coffee fresh.

Attiyate, Y.

*Food Engineering International* 3 (9) 36-38 (1978) [En, de, fr, es]

An air-tight plastics laminate bag (Fresco) incorporates a one-way valve to allow freshly roasted packaged coffee to degas so as not to rupture the package, but does not allow air to oxidize the coffee. The Fresco bag, developed by Luigi Goglio SpA, Milan, Italy, is a polypropylene/Al/polyethylene laminate, and the plastics/rubber valve opens at an internal pressure of 6 mbar and closes at 4 mbar. Freshly roasted packaged coffee has a shelf life of 6 months in the bags. Residual O<sub>2</sub> content in the bags after sealing is 0.1% vs. 1% normally left in cans. Fresco bags have proved successful in Europe and are to be marketed in the USA. DIH

## 77

Process for treating milk-coffee mixtures in sealed containers to eliminate inconsistency and deterioration in taste.

Ueshima, T.

*United States Patent* 4 093 751 (1978) [En]

It is claimed that inconsistency and deterioration in the flavour of hot milk-coffee mixtures in sealed containers is prevented by rapidly force cooling the sealed accumulated containers containing the hot milk-

coffee mixture from 90-95°C to approx. 40°C in 5 min, allowing the cooled containers to cool down further naturally to room temp. and pasteurizing or sterilizing the containers in a batch-type pressure tank. EJM

## 78

Coffee 'brick' challenges tins.

Anon.

*Food Engineering International* 3 (11) 28-29, 31 (1978) [En, de, fr, es]

The successful packaging of roasted ground coffee in flexible vacuum bags by the Canadian firm Nabob Foods Ltd., Vancouver, British Columbia, is described. The packaging equipment is from SIG, Neuhausen, Switzerland. Coffee is filled into bags, formed from rollstock, consisting of an inner liner and an outer wrapper. Each 1 lb bag enters an individual vacuum chamber, a vacuum is drawn, the inner liner is heat sealed, the outer wrapper glued, and the vacuum is then released. The equipment used operates at 95 bags/min. DIH

## 79

Liquid chromatographic analysis of N<sup>β</sup>-alkanoyl-5-hydroxytryptamine (C-5-HT) in green coffee beans. Folstar, P.; Plas, H. C. van der; Pilnik, W.; Schols, H. A.; Melger, P.

*Journal of Agricultural and Food Chemistry* 27 (1) 12-15 (1979) [13 ref. En] [Lab. of Food Chem., Agric. Univ., Wageningen, Netherlands]

C-5-HT was isolated from wax of green coffee beans and purified without preceding derivatization by polyamide column chromatography. C-5-HT was separated into 4 peaks by high-pressure liquid chromatography (LC) on a LiChrosorb 10 RP18 column; mass spectrometric analysis showed that these peaks were identical with 4 homologues of C-5-HT in which the alkanoyl group is a stearoyl (C18-5-HT), arachidoyl (C20-5-HT), behenoyl (C22-5-HT), and lignoceroyl (C24-5-HT) group. A method is given for the detn. of the amount of C22-5-HT in green coffee beans which can serve as control test for the amount of coffee wax present in green beans. The s.d. of this detn. was found to be <3%; the recovery was 100%. A standard sample of C22-5-HT was obtained from C-5-HT by LC on a preparative column; mass spectra, m.p., molar extinction coeff., and results of an elementary analysis of the isolated sample of C22-5-HT were found to be identical with those of a synthetic preparation of this compound. AS

## 80

[Method for decaffeinating green coffee beans.]

Verfahren zum Entcoffeinieren von Rohkaffeebohnen. Kurshals, H.-A.; Sylla, K. F. (Decofa Kaffee-Bearbeitungs-Gesellschaft mbH)

*German Federal Republic Patent Application* 2 720 203 (1978) [De]

Green coffee grains containing 15-50% water are decaffeinated by treating with a solvent mixture based on esters of organic acids and a ketone. Treatment takes place at a temp. of 20-120°C at a pressure which prevents boiling. The process avoids the aftertaste produced by the process using esters, such as ethyl acetate, which could not be removed by vaporization. W&Co

81

**Aflatoxin production in regular and decaffeinated coffee beans.**

Nartowicz, V. B.; Buchanan, R. L.; Segall, S.

*Journal of Food Science* 44 (2) 446-448 (1979) [En]  
[Dep. of Nutr. & Food Sci., Drexel Univ., Philadelphia, Pennsylvania 19104, USA]

The production of aflatoxin B<sub>1</sub> and G<sub>1</sub> in regular and decaffeinated coffee beans (green and roasted) inoculated with *Aspergillus parasiticus* was examined to determine the effect of decaffeination on aflatoxigenic potential. Aflatoxins were not detected in either the inoculated green or roasted regular beans. Small amounts of aflatoxin (0.30 µg/g) were detected in roasted decaffeinated samples, while high levels of aflatoxins ( $\leq 60$  µg/g) were detected in green decaffeinated samples. A sample of commercially decaffeinated green coffee beans was also found to support the production of aflatoxin. The data indicate that extra precaution should be employed to assure the safety of decaffeinated coffees. IFT

82

[Method for selectively extracting caffeine from plant material.] Verfahren zur selektiven Extraktion von Coffein aus pflanzlichen Materialien.

Roselius, L.; Kurshals, H.-A. (HAG AG)

*German Federal Republic Patent Application*

2 727 191 (1978) [De]

Green or roasted coffee beans, ground or whole, tea, cola leaves or aqueous extracts of these materials have the caffeine extracted by using a solvent comprising 2 components, 1 gaseous preferably CO<sub>2</sub> and the other preferably plant-like material having properties which on mixing with the gaseous components become liquid at the working temp. The solvent is circulated and the caffeine deposited or separated from the solvent by phase separation at elevated pressure and/or temp. W&Co

83

[Extracts of tea, coffee or their substitutes and manufacture of such extracts.]

Risler, P.; Gireag, J.; Rose, P.; Bissow, J.-P. (Societe des Produits Nestle SA)

*Swiss Patent* 604 551 (1978) [Fr]

A new instant coffee or tea in granular form with a porous and continuous structure, a surface without rough edges and a density of 50-300 g/l. is described. It is manufactured by taking an extract of coffee, tea or their substitutes, such as chicory extracts, in the form of a powder or paste, having a preferable water content of 2-6%, and extruding it through nozzles from an enclosure which is under sub-atmospheric pressure and at a temp. of 60-125°C. The extruded product is cut into fragments either before or after it expands. The grains produced have a size of  $> 1$  mm, preferably 2.5-15.0 mm, a honeycomb structure with a pore size of 0.01-1.00 mm, a resistance to crushing of 2.5-7.5 N, and a water content of  $\leq 6\%$ . W&Co

84

[Production of a decaffeinated vegetable substance and product obtained.]

Pagliaro, F. A.; Franklin, J. G.; Gasser, R. J. (Societe des

Produits Nestle SA)

*Swiss Patent* 604 552 (1978) [Fr]

Process for decaffeinating vegetable matter, particularly tea and coffee, involves bringing an aqueous tea extract or ground roasted coffee into contact with a liquid fatty substance which is not miscible with water, preferably after having separated the volatile substances from the extract or the grains; maintaining contact between the fatty substance and the vegetable matter at a preferable temp. of 30-150°C for a sufficient period of time for the caffeine to pass from the vegetable matter into the fatty substance; and separating the fatty substance which now contains the caffeine from the decaffeinated tea or coffee. The fatty substance is selected from safflower, soya, corn, groundnut or coffee-oils, triolein or lard. In an example, the volatile substances were removed from a roasted coffee extract, and corn oil at 60°C was added to the product obtained, which had a temp. of 22°C. The mixture was agitated for 30 min, and the oil was separated from the liquid, which had a degree of decaffeination of 51%. The process was repeated to give greater decaffeination. W&Co

85

Problem of water pollution in coffee plantations.

Mathew, P. K.

*Indian Coffee* 42 (12) 343-344 (1978) [En] [Coffee Board, Post Bag No. 5366, Bangalore-560 001, India]

The extent of pollution in different cities from various sources is briefly pointed out. The extent of river water pollution caused by effluents from coffee pulping plants, the quality of this pollutant, and the measures so far adopted in India including legislation aspects are also dealt with. CFTRI

86

Mechanical removal of mucilage by aquapulpa.

Kamau, I. N.

*Kenya Coffee* 43 (513) 383-386 (1978) [10 ref. En]

The use of the aquapulpa as a demucilaging machine or as a pulper-demucilager was tried repeatedly at Rukera factory in 1977/1978. The machine was found to work, but the wet parchment from the aquapulpa needed soaking before drying. Average power consumption in 3 trials was 48, 53 and 30 kWh, and water consumption 27 422 and 31 031 l/t clean coffee for a factory with a disc pulper and no recirculation, 11 882 l/t for a disc pulper with water recirculation. Further work on the aquapulpa continues. RM

87

New roasting process for coffee increases yield-per-bean by 20%.

Anon.

*Food Engineering International* 4 (1) 24-25 (1979) [En, de, fr, es]

Use of a roasting process that produces expanded beans, and careful control of subsequent bean handling and grinding, allows production of ground coffee that gives a higher extraction yield than does ordinary ground coffee, because of the higher surface area available. A Jetzone fluidized bed roaster, from Wolverine Corporation, Methuen, Massachusetts, USA,

is used. The resulting product is sold as High Yield coffee by Hills Brothers Coffee Company Inc, San Francisco, USA, in cans of the same size as conventional 1-, 2- and 3-lb coffee cans, but containing 13-, 26- and 39-oz, resp., because of lower product density. The consumer measures the same number of tablespoons/brew as of ordinary coffee, but uses less wt. DIH

## 88

[Process and apparatus for treatment of a product presented in the form of grains and application to roasting.]

Rios, G.; Gibert, H.; Crouzet, J.; Vincent, J.-C. (France, Agence Nationale de Valorisation de la Recherche (ANVAR))

*French Patent Application* 2 390 202 (1978) [Fr]

Apparatus is described for roasting coffee beans, cocoa and similar granular material by means of a fluidized bed in which the beans are roasted by impact with heated fine particles kept in suspension by a current of an inert gas. Efficient and uniform heat transfer is claimed. At the discharge end the beans are suddenly cooled and separated from the fine particles by a current of cold gas. The composition of the fine particles is not stated. W&Co

## 89

[Aromatic polycyclic hydrocarbons in some foods.]

[Review]

Nistor, C.

*Igiena* 27 (2) 103-108 (1978) [21 ref. Ro] [Inst. de Igiena si Sanatate Publica, Iasi, Romania]

The sources and contents of polycyclic hydrocarbons in foods, including vegetables, cereals, oils, fish, coffee and whisky, are reviewed. JMD

## 90

[Determination of 5-hydroxytryptamide in coffee by high pressure liquid chromatography.] Bestimmung der 5-Hydroxytryptamide in Kaffee mittels Hochdruck-Flüssigkeitschromatographie.

Hunziker, H. R.; Miserez, A.

*Mitteilungen aus dem Gebiete der Lebensmitteluntersuchung und Hygiene* 70 (1) 142-152 (1979) [23 ref. De, en, fr] [Abteilung Lebensmittelkontrolle, Eidgenössisches Gesundheitsamt, CH-3008 Bern, Switzerland]

Slight modifications were made to a previously published method [see FSTA (1977) 9 11H1963] for detn. of 5-hydroxytryptamide (5-HT) in coffee beans. The beans are now extracted with chloroform/methanol (87:13) in a Soxhlet apparatus, total 5-HT is determined by high pressure liquid chromatography (HPLC) on a Spherisorb silica gel column, and the 5-HT homologues are determined by chromatography on a Spherisorb ODS column. Full details of the modified method are given. HPLC detn. of total 5-HT content of 14 types of coffee bean, representing green and roasted, and different var. and provenance, are tabulated. Relative quantities of three 5-HT homologues (the (i) arachidic, (ii) behenic and (iii) lignoceric acid derivatives) are tabulated for 11 coffee

types. Relative amounts were similar in green beans, and were not affected by age of coffee. % of total 5-HT of (i)-(iii), resp. were in unroasted Arabica coffees 31.4, 59.3 and 9.3; in roasted Arabica 32.6, 49.4 and 18.0; in unroasted Robusta 35.4, 49.9 and 14.7; and in roasted Robusta 32.4, 55.2 and 12.3. Mean total 5-HT content of all beans studied was 747 p.p.m. DIH

## 91

[Process and apparatus for fermentation in an aqueous medium of fruits such as those of the coffee tree, cocoa nibs and cola nuts.]

Comptoirs Industriels Reunis Blachere & Cie

*French Patent Application* 2 381 478 (1978) [Fr]

The fruits, previously prepared, are floated with water into fermentation vats where they are fermented until hydrolysis removes the flesh from the kernels, with cooling if necessary. The dirty water containing mucilage is removed, and the kernels are then removed from the vats, dried and treated according to commercial practice. Apparatus for the purpose is described. The process can be automated. W&Co

## 92

[Method for removing from green beans components which contribute towards the presence of irritants in the roasted coffee.] Verfahren zur Entfernung von Bestandteilen aus Rohkaffeebohnen, die zum Vorhandensein von Reizstoffen im Röstkaffee beitragen.

Kurzhals, H.-A. (Decofa Kaffee-Bearbeitungs-Gesellschaft mbH)

*German Federal Republic Patent Application* 2 720 204 (1978) [De]

Green coffee grains are treated with esters and ketones to remove irritants without affecting the caffeine strength or taste in the roasted coffee. Treatment is effected at an elevated temp. with a solvent mixture containing  $\leq 1$  organic acid ester and  $\leq 1$  ketone. The esters are derived from 1-5 C carboxylic acids and 1-5 C alkanols. Methyl or ethyl acetates are preferably mixed with acetone or 2-butanone. The ketones used preferably have a b.p. of 100°C and are acetone, 2-butanone, 2- or 3-pentanone, or methyl-isopropyl ketone. The wt % of ketone in the solvent is preferably 0.05-50.00. W&Co

## 93

[Automation of determination of caffeine.]

Fabre, J.-C.-L.; Spitalier, F.; Estienne, J.

*Annales des Falsifications et de l'Expertise Chimique* 72 (773) 133-139 (1979) [11 ref. Fr] [Soc. Sopad-Nestle, Usine de Saint-Menet, 13011 Marseille, France]

An automated system for detn. of caffeine in green coffee or instant coffee powder (decaffeinated or non-decaffeinated) is described, based on release of caffeine by means of NH<sub>3</sub> solution (necessary only for green coffee), separation of caffeine from the extract by dialysis, oxidation with 1% KMnO<sub>4</sub>, reduction with 20% Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>/10% acetic acid, extraction into chloroform, and detn. by UV spectrophotometry at 277 nm. Tables of data are given showing correlations between results determined by this automatic method and by standard

methods; correlation coeff. were generally  $> 0.970$ . Repeatability of the automated method (g caffeine/100 g coffee) was better than 0.02 for decaffeinated and 0.01 for non-decaffeinated products. Daily throughput is approx. 80 green coffee samples or approx. 90 instant coffee samples. AJDW

## 94

Cups per pound advertising can yield a flaky product. Lee, S.

*Tea and Coffee Trade Journal* 151 (1) 6, 10 (1979) [En]

The claim that more cups/lb can be made from roasted coffee sliced into thin flakes than from ground coffee is examined. In the absence of strict laboratory tests, this cannot be substantiated. RM

## 95

**Method of producing a darkened freeze-dried coffee.**  
Ehr Gott, C. W.; Edwards, D. C. (General Foods Corp.)

*United States Patent* 4 138 502 (1979) [En]

A method is described for obtaining a darkened, freeze-dried coffee which comprises the steps of rapidly freezing the coffee extract, grinding the frozen extract, and then drying it in 2 steps in a vacuum chamber, at 350–650  $\mu$  Hg, which darkens the surface. IFT

## 96

**Caffeine extraction.**

Societe des Produits Nestle SA

*British Patent* 1 532 547 (1978) [En]

Coffee or tea compositions are extracted with a fatty material, e.g. soybean oil or groundnut oil, and the caffeine removed by vaporization to permit reuse of the extractant. IFT

## 97

**Glyphosate; tolerances for residues.**

United States of America, Environmental Protection Agency

*Federal Register* 44 (18, Jan. 25) 5136 (1979) [En]

[Washington, DC, USA]

A tolerance of 1 p.p.m. is established under the Federal Food, Drug, and Cosmetic Act for residues of the herbicide glyphosate (N-(phosphonomethyl)glycine) and its metabolite aminomethylphosphonic acid in or on coffee beans. CAS

## 98

**[Aflatoxin content in imported groundnuts, coffee, barley, wheat and walnut kernels.]**

Haberle, V.; Balenovic, J.; Briski, B.

*Hrana i Ishrana* 19 (9/10) 451–460 (1978) [8 ref. Sh, en]

[Zavod za Zastitu Zdravlja SR Hrvatske, Zagreb, Yugoslavia]

Studies on the aflatoxin content of imported (i) groundnuts (127 samples), (ii) coffee (118), (iii) barley (21), (iv) wheat (15) and (v) walnuts (14) are described. Overall,  $> 50\%$  of samples were free from aflatoxins or contained  $< 1 \mu\text{g}$  aflatoxin/kg. The max. tolerance of 5  $\mu\text{g}/\text{kg}$  in force in the UK, Canada and the Netherlands was complied with by 92.1% of (i), 78.8% of (ii), 33% of (iii), 93.3% of (iv) and 82.9% of (v) samples. No sample

exceeded the FAO tolerance of 30  $\mu\text{g}/\text{kg}$ , the highest value recorded being 25  $\mu\text{g}/\text{kg}$  in (i) and (iv). Coffee samples, initially containing 10  $\mu\text{g}$  aflatoxin/kg, were aflatoxin-free after roasting at 220°C. Similarly, roasting reduced the aflatoxin content of a batch of groundnuts from 3  $\mu\text{g}/\text{kg}$  to zero. IN

## 99

**Effect of hydrocolloids on apparent viscosity and sensory properties of selected beverages.**

Pangborn, R. M.; Gibbs, Z. M.; Tassan, C.

*Journal of Texture Studies* 9 (4) 415–436 (1978) [11 ref. En] [Dep. of Food Sci. & Tech., Univ. of California, Davis, California 95616, USA]

The effects were studied of low concn. of 5 selected hydrocolloids (xanthan, hydroxypropylcellulose, sodium alginate, and carboxymethylcellulose of low and medium viscosity types) on viscosity and sensory properties of 3 commercial beverages: tomato juice, orange drink and soluble coffee. Tomato juice and orange drink were tested at 0° and 22°C, while coffee was tested at 22° and 60°C by 11–14 highly trained judges. Apparent physical viscosity was determined with a Brookfield viscometer. Due to precipitate formation, it was not possible to test sodium alginate in orange drink nor hydroxypropylcellulose in coffee at 60°C. Without exception, increasing the hydrocolloid concn. significantly depressed ( $P < 0.001$ ) the flavour and aroma intensities of all beverages at both test temp. Taste effects were specific for the gum/beverage combinations. In general, gums depressed the sourness and saltiness of tomato juice, the sourness of orange drink and the bitterness of coffee. Both physical and oral viscosities increased with gum concn. and decreased with temp. Positive synergism was displayed by gums in tomato juice and orange drink. Excellent correlations ( $r > 0.9$ ) were obtained between sensory and physical viscosities. AS

## 100

**Process for the decaffeination of coffee.**

DEJ International Research Co. BV

*UK Patent Application* 2 001 838A (1979) [En]

A process is described for the removal of caffeine from green coffee beans by extraction with an aqueous liquor, with the extract being treated with a synthetic polymeric resin to adsorb the caffeine. IFT

## 101

**[Effects of roasting, automatic packaging and storage on coffee beans.]** Qualitätsanalyse der Prozesse des Röstens, automatischen Verpackens und Lagern von Bohnenkaffee.  
Szczepanik, R.

*Lebensmittel-Industrie* 25 (7) 315 (1978) [De, en, fr, ru]  
[Coll. for Planning & Statistics, Warsaw, Poland].

## 102

**[Evaluation of sorption of water by coffee beans.]**

Auswertung der Sorption von Wasserdampf in Bohnenkaffee.  
Doroszewicz, S.

**Lebensmittel-Industrie 25 (7) 316 (1978) [De]**

Studies on water sorption of coffee beans from Brazil, Colombia and Costa Rica are briefly described; a method for detn. of sorption characteristics is described, based on holding samples at constant temp. for various periods at a range of atmospheric RH, followed by moisture content detn. by a drying oven procedure. The results are briefly discussed. It is concluded that: the moisture sorption rate of coffee beans is relatively high; the moisture content of the beans may be a good index for regulation of roasting; and that the coffee bean samples studied differed relatively little in moisture sorption characteristics. IN

**103**

[Effects of storage and transport on losses of packaging materials in relation to packaging of coffee beans.] Der Einfluss der passiven Exploitation auf die Verluste an Verpackungsmaterial beim Verpacken von Bohnenkaffee.

Sobolewska, M.

**Lebensmittel-Industrie 25 (7) 317-318 (1978) [De]**

**104**

[Method for producing a coffee mixture.] Verfahren zur Herstellung einer Kaffeemischung.

Ewert, W. (Edelfettwerke Werner Schlüter GmbH & Co.)

**German Federal Republic Patent Application**  
2 733 536 (1979) [De]

Coffee mixture for use in sachets for infusion comprises particles of soluble coffee extracts fixed to the ruptured surface of roasted coffee particles. The ratio of roasted coffee to coffee extract is 4-5:1. W&Co

**105**

[Method for decaffeinating raw coffee.] Verfahren zur Entkoffeinierung von Rohkaffee.

Peter, S.

**German Federal Republic Patent Application**  
2 737 793 (1979) [De]

Raw coffee is decaffeinated by disintegrating the coffee with water vapour at elevated temp. until the coffee contains 15-55 wt.% moisture, extracting the caffeine with compressed gas and an extractant, and evaporating the extractant from the condensate and recycling. Almost pure caffeine is left behind, in the form of a white powder. W&Co

**106**

[Method for decaffeinating coffee with solvents at high pressures.] Verfahren zur Entkoffeinierung von Kaffee mit Lösungsmitteln bei hohen Drücken.

Peter, S.

**German Federal Republic Patent Application**  
2 737 794 (1979) [De]

Coffee is decaffeinated by extraction with a solvent at high pressure, preferably 100-500 atm, and at a temp. of preferably 35-50°C. The method is suitable for removal of caffeine from raw coffee (after disintegration with water vapour at elevated temp.), roasted coffee, or aqueous coffee extracts. W&Co

**107**

[Method for automatically producing portions of hot drinks from liquid concentrates.] Verfahren zum automatischen Portionsweisen Herstellen von Heissgetränken aus flüssigen Konzentraten.

Kückers, A. (DAGMA Deutsche Automaten und Getränkemaschinen Gesellschaft mbH & Co)

**German Federal Republic Patent Application**  
2 732 527 (1979) [De]

Pre-metered concentrate, such as coffee, is contained in a gelatin-like package which disintegrates on contact with hot water and releases the contents only when safely submerged in the water. In this way the liquid concentrate does not come into contact with the dispenser, which thus requires no cleaning. W&Co.

**108**

**Decaffeination process.**

Societe des Produits Nestle SA

**British Patent 1 540 170 (1979) [En]**

A process is described in which tea or roasted coffee extracts are contacted with a fatty material, such as safflower oil or the like, at a temp. >65°C to effect decaffeination. IFT

**109**

[Filter bag for making coffee infusions.] Filterbeutel für die Kaffeegetränkeherstellung.

Wieland, C. P.

**German Federal Republic Patent Application**  
2 731 917 (1979) [De]

The filter bag is made from an impregnated or coated filter membrane containing ground coffee or a mixture of ground coffee and neutral anti-caking agents, such as calcium carbonate, magnesium silicate, aluminium silicate or chalk. The coffee thus prepared in the filter bags has a good shelf life without losing its flavour and offers a quick and simple method of aroma extraction. W&Co

**110**

[Coffee bag.] Kaffeebeutel.

Martin, R.

**German Federal Republic Patent Application**  
2 738 969 (1979) [De]

A coffee bag for infusion in a cup has the powder or granules stored in a filter paper contained in a sealed airtight bag with a tear opening at the top for admission of water. When open, the package is funnel-shaped. W&Co

**111**

[Effects of O<sub>2</sub> concentration in the pack headspace and storage temperature on the quality of instant coffee.]

Quast, D. G.; Okada, M.; Miya Mori, E. E.; Lima, J. E. *Boletim do Instituto de Tecnologia de Alimentos, Brazil* No. 52, 81-89 (1977) [5 ref. Pt, en] [Inst. de Tecnologia de Alimentos, Avenida Brasil 2880, Caixa Postal 139, Campinas-CEP 13.100, São Paulo, Brazil]

Samples of spray-dried or freeze-dried instant coffee were packaged in 0.5 l. cans (each containing approx.

80 g instant coffee) with headspace O<sub>2</sub> concn. of 0, 2 or 21%, and stored for 0, 3, 6, 9 or 12 months at -10°C, ambient temp. (approx. 23°C) or 30°C. After storage, the coffee quality was evaluated organoleptically by trained and non-trained panellists. Tables of results are given, and discussed in detail. Quality scores tended to decrease during storage; effects of headspace O<sub>2</sub> concn. and storage temp. on quality were variable, and differences were relatively small. It is therefore concluded that neither headspace O<sub>2</sub> concn. nor storage temp., over the range tested, were major factors influencing deterioration of the organoleptic properties of instant coffee during storage. Some tasters detected a 'varnish' off-flavour in the coffee samples, probably attributable to the lacquer applied to the can or lid interior. AJDW

## 112

**Partition coefficients for acetates in food systems.**

Kieckbusch, T. G.; King, C. J.

*Journal of Agricultural and Food Chemistry* 27 (3) 504-507 (1979) [13 ref. En] [Dep. of Chem. Eng., Univ. of California, Berkeley, California 94720, USA]

Flame-ionization gas chromatography was used to determine equilibrium partition coeff. for C1-C5 alkyl acetates at high dilution between air and water, aqueous solutions of various carbohydrates, vegetable oils, and mineral oil. A modified sampling and injection technique was used to overcome sorption effects for vapour samples. Measurements were made over a range of temp. from 25 to 50°C. Partition coeff. between air and solutions of sucrose, maltose, and dextran ( $M_r$  90 000) increased sharply with increasing dissolved-solids content. For disaccharide solutions this could be attributed qualitatively to loss of free water due to hydration of sugar molecules. For solutions of maltodextrin, dextrin, and coffee solids, the acetates were held in solution more at higher dissolved-solids contents, and the partition coeff. for pentyl acetate actually decreased with increasing concn. of dissolved solids. Partition coeff. between air and the oils were much lower and indicated an activity coeff. of about 0.7 for the acetates in coffee and peanut oils. AS

## 113

**[Coffee processing: chemical, physical and technological aspects. II. Effects of pre-concentration on freeze-drying of extracts.]**

Lerici, C. R.; Pepe, M.; Matassa, P.

*Industria delle Bevande* 8 (1) 16-22 (1979) [26 ref. It] [Istituto di Ind. Agrarie, Univ. di Bologna, Bologna, Italy]

Samples of coffee extract were used in studies on effects of pre-concentration (to 5-40% DM) on freeze-drying characteristics. Aspects studied included loss of volatiles during vacuum-concn., and effects of the DM concn. of the extract on temp. of the frozen layer, vapour pressure at the front of sublimation, the vapour pressure gradient, and limiting pressure of the freeze-drying chamber. Graphs and tables of results are given. A large proportion of the loss of volatile substances during concn. was associated with removal of the first few % of water; collection and return of this fraction to the condensate improved retention of volatile

substances in the freeze-dried product. The temp. of the frozen layer, vapour pressure and vapour pressure gradient at the sublimation front all increased with increasing DM concn. in the extract. Practical implications for the freeze-drying process are discussed. [See FSTA (1979) 11 6H921 for part I] AJDW

## 114

**[Voltammetric determination of caffeine in coffee, tea and soft drinks.]** Voltammetrische Bestimmung von Coffein in Kaffee, Tee und coffeinhaltigen Getränken. Sontag, G.; Kral, K.

*Mikrochimica Acta* I (3/4) 229-240 (1979) [19 ref. De, en] [Univ. Wien, Währinger Strasse 38, A-1090 Vienna, Austria]

Differential pulse voltammetry is used for detn. of caffeine in soft drinks (cola), coffee and tea, after oxidation at a glassy carbon electrode at pH 1.2. Voltammetric results agreed well with those obtained by high-performance liquid chromatography (HPLC). To elucidate the mechanism of the electrode processes the reaction products were produced by anodic oxidation of caffeine at pH 1.2, 2.3 and 6, and identified by cathodic differential pulse polarography. Caffeine concn. were 1.14-1.31% in normal roast coffee, 0.063-0.60% in decaffeinated roast coffee, 2.46 and 3.13% in normal soluble coffee, 0.18% in decaffeinated soluble coffee, 3.24% in tea and 93 mg/L in cola drink. [From En summ.] RM

## 115

**[Comminution. Granulation of brittle materials.]** Zerkleinerung. Das Granulieren spröder Substanzen. Samans, H.

*Ernährungswirtschaft* No. 2, 29-30 (1979) [De]

Toothed disc mills may be used (at 1000-1500 rev/min) for comminution of grain, or (at 200-400 rev/min) for gentle comminution of croquant and frozen coffee extract (for subsequent freeze-drying). With frozen coffee extract, use of 400 mm diam. grinding discs gives an hourly throughput of 250-300 kg with a 0.5-2 mm output particle size. For croquant, a 300 mm grinding disc (giving a throughput of 200-400 kg/h) is recommended. If the product is in the form of lumps, a roller-type crusher should be installed before the disc mill. The use of cutter-type granulator for strands of material from an extruder or a roller-drier is also discussed. IN

## 116

**How to extend shelf life of coffee.**

Anon.

*Tea and Coffee Trade Journal* 151 (4) 30 (1979) [En]

Extension of the shelf life of roast and ground coffee by N<sub>2</sub> purging during packaging is described. Zero % O<sub>2</sub> was achieved by injecting N<sub>2</sub> gas at the base of the hopper and at entry of coffee into the package in a single auger FMC form/fill/seal machine. In addition to achieving zero % O<sub>2</sub>, the volumetric filling method assures accuracy of package wt. RM

117

**Method for producing a brewable roasted coffee and wheat product.**

Spotholz, C. H.; Scarsella, E. L.; Yadlawsky, S. (General Foods Corp.)

**United States Patent 4 142 002 (1979) [En]**

A roasted and comminuted coffee-wheat product in which the wheat has been roasted to an end temp. of 450–460°F over a period of 40 to 90 min. The roasted wheat is then combined with roasted coffee either before or after grinding. IFT

118

**A method for producing a coffee drink contained in a vessel.**

Kanebo Co. Ltd.

**British Patent 1 544 376 (1979) [En]**

A method for producing a coffee drink involves heating non-milled roasted coffee beans with water, sweetener and a milk product, at a temp. of 80–130°C for 10–90 min in a sealed vessel to effect extraction, without releasing the sealing. Raw, pasteurized or condensed milk, dried milk, fresh cream or their combinations may be used as the dairy ingredient. FL

119

**Multi-compartment coffee steeping bag and support clip therefor.**

Syroka, E. C.; Syroka, B. A.

**United States Patent 4 141 997 (1979) [En]**

A flexible, porous, multi-compartment beverage infusion package having a cup-edge support clip is described. IFT

120

**Iced coffee product.**

Unilever Ltd.

**British Patent 1 523 591 (1978) [En]**

Iced coffee is prepared by the addition of an aqueous liquid to a frozen aromatic concentrate in the form of a foamed water-ice. IFT

121

**Decaffeination process.**

Societe des Produits Nestle SA

**British Patent 1 523 639 (1978) [En]**

Aqueous extracts of tea and coffee are decaffeinated by contact with a hydrophobic polymer resin having a dipole moment of <2.0 debye. IFT

122

[**Granulation process.**]

Momose, T.

**Japanese Examined Patent 5 402 259 (1979) [Ja]**

A process is described for granulating powdery foods such as instant coffee by mixing the powder with alcohol to form a paste which is then granulated and vacuum dried. IFT

123

**Coffee extraction.**

Societe des Produits Nestle SA

**British Patent 1 537 205 (1979) [En]**

Process is described for the liquid extraction of materials, such as coffee, employing a cell battery and the addition of extraction liquid to an evaporated extract used in the process. IFT

124

**Mechanical drying of Arabica coffee.**

McLoy, J. F.

**Kenya Coffee 44 (516) 13-26 (1979) [En]**

This report [reprinted from Kenya Coffee (1959) 24 (280) 117–119, 121–129, 131, 133] summarizes the findings of a 3-yr research programme on the mechanical drying of Arabica coffee, and makes recommendations on the selection and use of mechanical dryers in the following sections: effects of delayed drying; effects of rain; effects of fermentation and washing; principal effects of machine drying; effect of light on coffee beans; key to successful machine drying; pre-sun drying followed by machine drying; pre-machine drying followed by sun finishing; storage of damp coffee; sun drying; final conditioning; types of driers; types of ventilated bins; equipment for the small estate; and equipment for estates with no electricity. RM

125

**Coffee-soybean blends: A commercial potential?**

Rao, R. M.; Novak, A. F.; Nguyen, T. C.

**Louisiana Agriculture 21 (4) 6-7 (1978) [En]**

Attempts were made to develop a soybean product which could be used as a coffee extender or substitute. Preliminary experiments with soybean var. Tracy and Hutton indicated that the former has a less beany flavour and this var. was used in subsequent studies. Studies were conducted on both whole and cracked beans, either unsoaked or soaked in water (at 50°C for ≤ 6 h with a bean:water ratio of 1:3 or 1:5); all beans had been pre-dried to a moisture content of 11%. Processing steps included alcohol solvent extraction (at 78°C for ≤ 10 h with a bean:alcohol ratio of 1:5), desolvantizing, roasting (at 190°, 210° or 230°C to give, resp., light, medium and dark degrees of roasting), grinding and flavouring with natural coffee. Boiling water was added to the final product and the resultant beverage was organoleptically evaluated. Consideration was also given to % water absorption during soaking, effect of solvent extraction on % oil extracted from the beans, and effect of roasting on pH and moisture and oil contents of the beans. On the basis of the results, optimum processing conditions were established for cracked and whole beans, both soaked and unsoaked. A blend of equal quantities of coffee and processed soybeans produced an organoleptically acceptable beverage. JA

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Coffee technology: future is now.

Lingle, T.

*Tea and Coffee Trade Journal* 151 (4) 16 (1979) [En]

[Lingle Bros. Coffee Inc., Bell Gardens, California, USA]

The application of the coffee conductivity meter to non-destructive detn. of soluble solids in coffee beverage is briefly discussed (e.g. for evaluation of consumer preference, coffee brewing equipment and coffee product yield). RM

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